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ABSTRACT

Synopses of six conference presentations are provided in this pamphlet, dealing with the theme of leadership and professional standards in university settings and the influence of social and technological challenges. In "Leadership and Team Building: Key Ingredients to the Institutional Research Role of the Future," Robert L. Taylor challenges institutional researchers to play a greater leadership and team building role in their institutions. In "What Does the Future Hold for Institutional Research?," George Keller considers the twin pulls toward greater centralization and greater decentralization of information in higher education, and the issue of external change versus internal demands. "A Personal Retrospective on the Development of Institutional Research," by C. Robert Pace, describes lessons learned on understanding institutional goals, developing questionnaires, and associating institutional research too explicitly with administrative decision making. "A Fundamental Challenge for the Institutional Research Profession," by Frans A. van Vught argues that institutional research lacks a scientific base. "From the Past for the Future," by Gerald W. McLaughlin, examines the role of the Association for Institutional Research over its 30 year history. In "Quality in Higher Education--A Verb, Not a Noun," Lawrence A. Sherr outlines five ingredients of continuous process improvement: honesty, shared vision, patience, commitment, and a theory or plan. (JDD)

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Institutional Research Coming of Age

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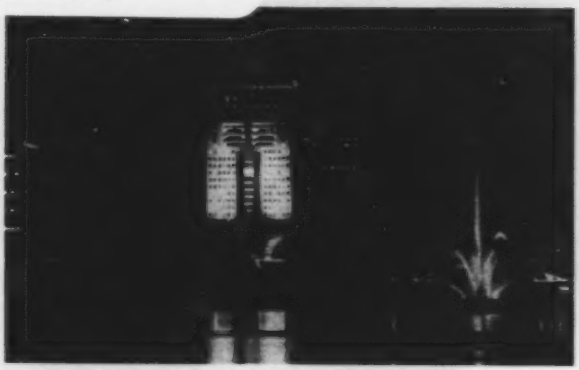

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General Session Presentations
30th Annual Forum
Association for Institutional Research
Louisville, Kentucky May 13-16, 1990

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Institutional Research Coming of Age

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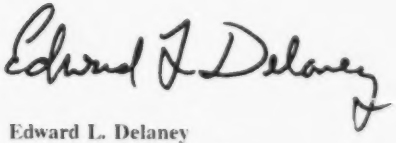
INTRODUCTION

The Association celebrated its Thirtieth Anniversary Forum in Louisville with the theme, "Institutional Research--Coming of Age." The Louisville theme and program attempted to review and further develop the three decades of the profession by linking together the emphasis on leadership and professional standards begun at the Phoenix Forum of 1988 with the press of social and technological challenges raised last year in Baltimore.

The Forum Program with over one-hundred twenty-five panels, contributed papers, demonstrations and other professional development opportunities provided participants with a wide array of issues and experiences. Continuing the practice of recent years, the program was again structured around seven basic tracks, although the topical thrusts of several tracks were expanded, and some sessions tended to span beyond a single topical track.

The synopses of the four general sessions are presented in this volume. In the opening session, Robert Taylor challenged in an unusual way institutional researchers to play a greater leadership and team building role in their institutions. In another session, George Keller provided a future vision of the opportunities and expectations for institutional researchers. Bob Pace shared his personal retrospective on the development of the profession, while Frans van Vught challenged institutional researchers to develop a scientific base for the profession. In this year's presidential session, Gerald McLaughlin reminded the membership that we have responsibility for providing *institutional* leadership and *research* on the critical issues confronting institutions, while Larry Sherr expanded on his vision presented last year on the need to achieve higher quality programs and services in our colleges and universities.

The synopses contained in this volume provide a glimpse into the key ideas and view of the profession which guided the review of its past and challenges to its future. I am confident that the discourse begun in Louisville on institutional research as a profession coming of age will continue in the years ahead.



Edward L. Delaney
Louisville Forum Chair

Leadership and Team Building: Key Ingredients to the Institutional Research Role of the Future
(opening general session)

Robert L. Taylor
Dean, School of Business
University of Louisville

(This is an edited record of an address presented in the Grand Ballroom of the Galt House, in Louisville, Kentucky, on Sunday evening, May 13, 1990.)

Setting the Stage

I would like to work with you in thinking through (1) a philosophy about leadership and team building, (2) the role that institutional research plays now in university settings, and (3) what must change for institutional research to play a significant role in the future. This exercise is not another tool or technique, but something I'd like you to just spend some time thinking about.

My experience indicates that we spend a lot of time trying to identify goals and objectives. We search for the right information, the right data, and then we collect it and analyze it. But we don't often enough start with the key questions: What are our values? What is our philosophy, and how do we want to think about it? I honestly believe that leadership and team building first require a philosophical understanding and commitment. Then you can plan and execute. I would like to use a metaphor because we come from such varied backgrounds. I would like you to move from being left brain--logical, rational folks--to being right brain--intuitive-thinking folks--and participate in an experience that will allow each of us to look for the elements of leadership.

What is leadership? We know good leaders when we see them. We certainly know ineffective leaders when we analyze consequences. But what are the conditions that allow leadership to occur? How can you get everyone to work together with common goals and objectives? How can you participate in the university setting with academic affairs, student affairs, administrative affairs, and feel that you're all working towards a common objective? Ponder the role of institutional research and the orchestration of our professional organizations. How does that really work? And most importantly, please don't expect specific facts.

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(At this point in Robert Taylor's speech, the audience viewed the film, "The Bolero," produced by the Pyramid Film and Video.)

* * * * * *

A Metaphor: The Symphony Orchestra

A symphony orchestra is an interesting metaphor for the organizations in which we work. Some of us provide the melody; others provide the harmony. Just as the music evokes different emotions in the audience, it creates different emotions for the musicians. We have the same responses in academe. What some find exciting, other people do not. And sometimes it's very difficult for us to meet around the same table or at the same institution and share a common mission when we bring different approaches to the situation. Achieving harmony is something that we really work hard to achieve in the university setting. Did you note that there is great harmony in the theme? The musicians come to the symphony with very different motivations. They love music. That's why they're there; they just love it. The same can be said for those who work at the university. Each person--faculty or staff--has a unique expectation about his or her work.

So when you look at a university, you see people who have come with a variety of backgrounds. Often when we speak of the faculty or the staff, we assume that somehow we hold common values about why we're here, but in truth, we do not. We hold very different values, and we hope that the university setting will provide a place where we can express those values. Sharing a common vision is something we have to work very hard at. And quite frankly, the only time this happens is when you develop a plan, in which you specifically articulate the mission and objectives. Musicians have involvement and ownership; they really care about how they perform their piece of the music. And when you work hard on a project and present it to a group of deans and vice presidents who seem to have no understanding of what it means. You get frustrated. Your audience only seems interested in picking apart a little result here, a statistical analysis there. And you see and you feel your own pride just fading away because even though you did a good job, it wasn't accepted or reflected in this symphony of the university.

We have a hard time in universities because everyone thinks of their own discipline, their own instruments, their own section as the most important, and they fail to recognize that to have a symphony, you have to have many other people. The leader clearly orchestrates the results. And the spirit he or she creates at the end is conveyed by a smile on his or her face that lets you know you're doing it right. You *know* it's right. And that spirit is also exemplified when the first violinist (or dean?) starts the violin passage with energy, and the others respond with gusto. That's enthusiasm. What a difference that spirit makes! Doesn't that make a difference in your own unit and in your own university?

I am very excited about the opportunities that confront us. I hope you all see what the exciting opportunities are for your units. If this is the year we have to reallocate resources, we know it's going to be difficult. We will have to stop doing some things that we've done before. But by golly, we are going to get together and do the job. We're going to share this as a team, and we are all going to participate. Now the cynics among the crowds say, "Oh, boy, here goes the faculty senate and the staff senate, and everybody's going to get all upset." But believe me, if you can jump into something as challenging as reallocation with a spirit and enthusiasm that creates the opportunity for everyone to be winners, that spirit will make a difference.

Well, where does the leadership come from? Clearly, it comes from the conductor. It comes from the soloist. I think the message about leadership is that the person who is in the leadership or headship role is not necessarily at any given time the leader. We all can have an opportunity to demonstrate leadership. And I have seen that leadership from people in institutional research and planning, when people were sitting around trying to figure out how to attack a problem and one person said, "Well, here are some ideas, let's think about how we can approach them in a certain way." All of a sudden, this person becomes the leader, and the rest of us follow. Don't assume, because the president is in the room or the provost or the vice president, that those persons are exercising leadership. Rather, look for where the ideas are coming from, look for where the energy is coming from, and be willing and able to exercise leadership on your own. You are not defined just by an organizational chart, but by your contribution. *You* have opportunities for leadership.

I'm always intrigued by watching the support people, the basses and percussion. Institutions have rhythms to them, just like the rhythms the percussion and the bass sections provide in the symphony. You have to be very careful to contain the tempo; you can't let it get away from you. And what I've seen in higher education in the last few years is that institutions have let the tempo get away from them. They capture a new concept--for example, internationalization--and pretty soon it starts running away with all of the resources and all of the energies. We forget what it is we were doing before. Or we take on a new market or we take on retention, and all of a sudden the only thing that's important is increasing the retention rate. We get all these statistics, and we forget about the critical question, "What is the mission of our institution?" Always keep in mind as you're asked for data, as you're asked for information, as you're developing concepts: What is the rhythm of your institution, and how can you help maintain it? Because that's how an institution advances, in tempo, not in fits and spurts.

Leadership

Leadership comes from actions and from attitudes that people have about doing the best that they possibly can. Leadership comes from each one of us taking pride in what we do. The metaphor applies. Our institutions are much akin to a symphony. Both reflect leadership and team building. How often do we have to do things we don't want to do? How you take such tasks on is the real challenge to leadership. Leadership means that you tackle a task that you really don't want to do with the same energy and enthusiasm you bring to something you're trying out for the first time.

Vision. The first element of leadership is having a vision, being able to see what others cannot see: A future state of affairs for your institution, your unit, your community, or your church. What separates leaders from other people is that they not only have a vision, but they are committed to that vision. They have a loyalty to it. They're energized to achieve it. These are not daydreams, because daydreams are just fleeting things. Vision means that you see something about the future. Your next task is to get everyone else to see the same thing.

Communication. The way you do that is through communication. Leaders are good at communicating their visions. You don't tell people, instead you start sharing stories with them. You create symbols so that people identify with the organization and unit. A wonderful

set of ads that appeared about a year and half ago in national papers and magazines showed employees from the General Electric Company with T-shirts that said, "GE is me." The symbolism of those T-shirts was very profound, because to the workers that slogan said, "Hey, we count in this company." GE had been fragmented for years by management-labor disputes. To the management people, the T-shirts signified that the employees really did count and were to be taken seriously. To customers those ads said, "Hey, those are Americans making our products, and they're real people just like me. I'm going to buy from them." Leaders create symbols, an image of what it is they're trying to achieve. And that's the special thing they bring to communications.

The most important skill leaders have in the equation of our organizations, however, is the ability to ask questions. Another critical skill leaders have is listening. People who chair a meeting often have all of the answers; they don't need anybody else, they could just do it themselves. Leaders *ask*: "Why are we doing this? Is there another way? Do we have a better alternative? What do you think?" People at the top of organizations are the ones least capable of making the best decisions because they have the least amount of information. What institutional researchers need to do in this leadership dilemma is to help leaders understand that the information is to be found where the faculty meet the students or where the salesperson meets the customer. That's where the primary information is. How satisfied students are with the quality of their education can not be counted by the number of student credit hours generated nor by a random sample of fifteen students. Rather, we need information from the constant daily interaction of the faculty member and the students with the institution itself. But that kind of information is rarely at the top when decisions are made about where we're going to go. How can you help the people at the top to understand the value and the quality of information they have, and how can you develop your research to provide information for the people who are where the action is, those who desperately need it to make the ongoing day-to-day decisions? That's a real challenge for the future of institutional research.

Finally, you communicate a vision through emotions. Because words are just not enough, you do it through emotion, which then translates into action. If your institution is truly committed to affirmative action, then everybody involved in making hiring decisions must demonstrate that commitment. You don't just put an edict out and say we're committed. From the top to the bottom and all of the sides, there must be clear evidence that that's what our commitment is. Well the same goes for your institutional mission and for your goals and objectives. If you are not accomplishing them in a day-to-day way, then they're not worth the paper they're written on.

Taking risks. The third element of leadership is taking risks. We can no longer be conservative in academe. We have to take risks. We have to put venture funds into trying the unknown. We have to explore new ways of educating people. But our institutions are designed to minimize and eliminate risk. And that's a difficult challenge. There are people willing to explore and take risks. And I think we need ideas from people in institutional research about the kinds of risks we ought to be taking.

Action. The fourth element of leadership is understanding the process of motivation. You cannot motivate anyone; people motivate themselves. You can change people's behaviors; yes,

you can do that. You can offer people promotions, you can give them merit raises, you can punish them, you can give performance appraisals. But *they* will decide--the employees, the people you work with--whether or not they are enthusiastic about what they're doing. We work in bureaucracies in which it's just assumed that a 7.5 percent pay raise will motivate everyone to work hard next year. Or we assume that if we give Person A a 10 percent merit raise and Person B a 5 percent, somehow we're reinforcing Person A and we're going to motivate Person B to try harder. Neither one of those is true. Persons A and B may not be there for the money; they may be there for some other reason. They came to the symphony with a different set of objectives and values in mind. We have to work harder to identify why people at universities work there and what will keep them active, enthusiastic, and involved. Simply juggling an annual salary allocation is a very shortsighted way of approaching this issue.

Values. The last element really has two parts. Leadership is loyalty and commitment, but it goes both ways. Loyalty goes up the organization and, more importantly, loyalty comes down through the organization. If we're going to encourage risks, we don't slap people's wrists when they make a mistake. Instead we encourage people to make mistakes and we encourage conflict because that's how change takes place. Large bureaucratic organizations tend to want to minimize mistakes. Afraid that we'll look bad, we try to cover up, move aside, or just reformulate the results so it doesn't look like we made a mistake. Yet my study of successful leaders reveals that, at one time or another, they made a serious mistake. What they learned from that experience contributed to their success as a leader. If we in administration want people to have loyalty to our institutions, then we'd better have loyalty to people who work with us. One of the fascinating things about President Reagan was his ability to inspire incredible loyalty from the people in his cabinet and the people who worked in his administration. When those people got into trouble, he remained loyal to them even when public opinion went otherwise.

The most important value that leadership requires is trust--a rare commodity in academic institutions. You cannot have leadership without trust. You can have dictatorship, you can have headship, you can have management, you can have administration; but leadership comes only when people start to trust each other because they share common values and they share a common goal for the institution.

Team Building

What have we learned about team building so far? Well, one thing we learned is that you have to be looking at the conductor. You have to be honed in on the president while you are listening to what's going on. Get out of your institutional research offices and walk around the campus. Find out what's going on. What are people's concerns? Talk to the students; don't talk to deans because they don't know what students are thinking about. When you talk to students, get a sense of what your data mean relative to what you're studying. I would love to have that occur. Then, talk to people who aren't students (and should be) and find out why. That's what we really need to think about.

We get so set on reading our journals and professional literature about key issues. Quite frankly, I'd be much happier if institutional researchers were reading existentialism, listening

to country music, and just going out and cruising the campus every once in a while. *Then* read the professional journals. I think you learn more in our changing environment because our professional literature merely has us extrapolate the past. The papers were researched two years ago and the data were collected two years before that. Is that state of the art? Our environment is changing so fast that we can't afford to worry about what happened three years ago. We need to be tuned into the future. I learn more from popular music lyrics about what people are thinking than I do from any research paper I've read.

The emphasis has to be on the group and not the individual; whether we're talking about your institutional research group or the whole university. I see universities in which one school or one unit is the stellar one, and everybody just kind of centers on that--the pride and joy. The rest of the university stagnates.

I see institutions in which the individual is so important that people forget the fact that you have to have everyone there. Sure, all those soloists are good, but that doesn't mean anything unless they can play together. People need to learn that whether they are administrators, faculty, or staff, they can be soloists every once in a while, but they also play in the chorus, and both are equally important. Sometimes soloists are so excited about their solo that that's all they want to do.

Feedback and evaluation are important. But we must look at the way feedback is given. The idea of getting feedback from people is not having the answer and saying, "That's not right, that's too much, that's not good enough, I want to see better out of that unit," but rather asking the questions. You can help formulate the right questions.

One thing I like to do is meet with the folks in our institutional research area every once in a while and ask for their perspective of what we're doing in the business school. Institutional researchers are marvelous at asking questions that get me to really think about what we're doing and how we're doing it. This is much more valuable than trying to do it myself because I'm biased by what I do every day. That's an opportunity you offer to your campuses. But you've got to go out and share that feedback. Feedback is only important in a team if it's open and accurate.

Changing Environments

Institutional research is changing. The variables that you need to be concerned with are shifting dramatically, because the world about us is engaged in so much dynamic evolution that the data that have been collected for the last thirty years are not the data we need for the next ten. We don't need market research on who's going to buy our brands, but on what the opportunities are to provide education for our constituencies.

My hypothesis is that urban schools will spend less of their time educating undergraduate and graduate students in the next twenty years and much more time providing continuing and professional adult education. That will be the source of most revenues twenty years from now. There are not many that share this belief. What will the research reveal?

Further, we shouldn't be worried about the number of 18- to 22-year-olds, but we should be very concerned about the higher education illiteracy that we have in our workforce. Because work is changing dramatically, employees need to be educated and they need to upgrade their skills. Universities are poised to do that, and those people range from age 18 to 68. We must reassess what our markets are. We're still worried about the number of 18- to 22-year-olds while industry spends more on education than the combined higher education budgets throughout this country. We should be in that game.

Universities must build on strengths. But oftentimes when you have a group of soloists screaming that they are the most important, you need an objective evaluation. We need some input as to which are the strengths: What are the most important sections, where are our best soloists, where could we have fewer violins and perhaps have the same rich sound in the orchestra? You see, an orchestra can be 110 pieces, it can be 55 pieces, it can be 70 pieces, it can be all sizes. For years, we've been saying that each one of us is going to be an orchestra. Some of us started out as ensembles; some of us started out as string quartets; some of us started out as orchestras; and I think we all believe we should be all 110-piece orchestras, able to play any piece.

The demographics are changing, yet everybody is still trying to be an orchestra, and players are leaving. Subscribers aren't coming to the concerts. And all of a sudden you're struggling to find out what you are. It's better to be the Julliard String Quartet than an orchestra with 34 pieces, all of them bassoons.

Yes, the orchestra has limited resources. The conductor carefully schedules rehearsals. The time limitations are very strict. That's very much what we're faced with. The score, the outcomes assessment, is the biggest single opportunity and challenge you face in the next five years. Quit counting inputs and start helping us count outputs. Because if you don't, those of you in public institutions will find that state legislatures are going to do it for you. And those of you in private institutions are going to find that when a few institutions start advertising that they can measure the quality of their students' $15,000-a-year investment, you'll be asked why your school can't. And believe me, parents will have their children vote with their feet. We *need* meaningful outcomes assessment.

The Role of Institutional Research

Well, what role will you play? Are you staff advising the president? Or are you the first violinist, trying to get a team to make sure they're all playing the melody with the same gusto, "bowing" together? Or is planning what you do--do you write the score--that others must execute?

I see institutional research as one of the most strategic roles of the twenty-first century. Because as we move into the information society, if you are able to collect the right kinds of information, you will be the most powerful part of the university setting. You must be able to identify what that information is, to bring it in, to analyze it, and then to disseminate it.

In American industry for the last twenty years, whoever assembled the most financial resources was the most powerful. Those organizations are disappearing. They're being

replaced by those service industries that can identify where the markets are, identify where the customers are, bring the data together, analyze it, and make a match. Those are the organizations we must clone.

Information will be power. Because you're in the business of identifying and acquiring information, analyzing and disseminating it, you are the key pivotal unit. I see this as a dean; I see this in relation to industry; and I see this in terms of the orchestra. Planning and research are the key instruments in the ensemble of the university. The conductor, the score, and all of us as players must work together in bringing our visions for our institutions into reality.

What Does the Future Hold for Institutional Research?
(general session)

George Keller
Senior Fellow, Graduate School of Education
University of Pennsylvania

(This is an edited record of an address presented in the Grand Ballroom at the Galt House in Louisville, Kentucky, on Monday morning, May 14, 1990.)

When AIR's forum chair, Dr. Edward Delaney, asked me to speak nearly a year ago, I was reluctant because I am not now and have never been an institutional researcher. But Ed spoke in his usual soothing tones and said, "Don't worry, we'll send you all the materials you need to bring you up to speed." I had no idea how thorough he would be. He enlisted Dennis Hengstler and Jean Chulak and others to send me materials. Before long, my mailbox was full of books, articles, and pamphlets--everything from Muffo and McLaughlin's *A Primer on Institutional Research* to several volumes of *New Directions for Institutional Research* and dozens of papers from your *AIR Professional File*. I was also encouraged to study issues of *Research in Higher Education* and to interview my friends in institutional research, which I conscientiously tried to do.

I now have a sense of what it's like to have the National Rifle Association or the American Association of Retired Persons lean on you. I have no idea how you people keep your sanity. I read about student flow models, economic impact studies, the help you provide with institutional self-studies, program evaluations, the work you do with the budget, retention studies, data for strategic planning, data for fund-raising such as donor research and alumni records, and reports to the federal government, the state government, and state higher education commissions. I read about environmental scanning, program needs assessment, advice on the purchase of hardware, software, and networking, competitor analyses for the admissions office, statewide, national, and international comparisons. The portfolio is breathtaking. The number of tasks you people do would push a normal person out of sanity. So I can only surmise that most of you in the audience are abnormal.

I was helped in my understanding by a wonderful article that Laura Saunders wrote ten years ago, in which she said, "The institutional research analyst, as a result of the special work of IR, must work under great time pressure, must contend with a large volume of pressing concerns, each competing for attention and must have access to and be knowledgeable about sources of information within and without the institution, and the analyst must do this all rapidly, accurately, and with good humor." I have a sense that I am speaking not to the Association for Institutional Research, but to the Clark Kent Society.

An Art, Not a Science

I've been asked to speak about the future of institutional research. As you know, looking at the future is a hazardous assignment. The old saying goes, "He who lives by the crystal ball lives to eat broken glass." Nonetheless, I will talk about a few of the changes I see for you. I would like particularly to call your attention to two major developments that I believe will shape your future.

Before I talk about these two major developments, however, I'd like to express an opinion about the continuing argument about whether institutional research is or can be a science, or whether it is and always will be an art. You will hear more eloquent and methodical comments on this subject tomorrow by our fellow scholar from the Netherlands, Frans van Vught. I just want to offer a few remarks.

I believe that institutional research will continue to be an art or high-level craft demanding great skill and meticulous craftsmanship. It will continue to be more a profession like architecture than a science like molecular biology. For one thing, many of the finest people in the social sciences are coming to believe that the social world may not be as susceptible to scientific lawfulness as many people thought as recently as a decade ago. Skepticism about a science for social behavior is growing like a mold over all social studies, even in the field of economics. For another, I think we're beginning to realize that science, which has great power in the material world, has become an ideology in social studies.

We have come to believe that science is somehow a higher activity than statesmanship or craftsman-like behavior. Yet, Leonardo da Vinci was not a lesser person than Galileo; nor is interpretation any less intellectual than mathematical logic. As Ludwig Wittgenstein said, "The existence of experimental method makes us think we have the means of solving problems which trouble us though the problems in methods pass us by." Anthropologists such as Clifford Geertz and others are learning that being emotionally close to the subject can often yield more understanding and accuracy than scientific objectivity. William James, a great American psychologist, observed that loving is a deeper form of knowing than detachment. And many of you, I know, love your institutions and the world of higher learning.

For better or worse, institutional researchers seem to be married to institutions of higher education. Intimacy is a help, not an impediment. IR people will always need to know their organizations and the world they live in as Shakespeare knew humankind, and not as scientists know the motion of planets or the tiniest particles.

Twin Pulls: Centralization and Decentralization

The first of the two major developments that will affect the future of institutional research is that of the twin pulls toward greater centralization and greater decentralization of information in higher education. This is not a new tension. Marv Peterson has written beautifully about this; Peter Ewell has talked about it. Edward Delaney has written a nice article, and numerous others of you have seen this coming.

Centralization is required by the growing demands for accountability, for accurate reports, for strategic and financial planning, for quality control across all the schools and departments, and for comparisons within institutions and with peer institutions. COFHE, NCHEMS, and numerous others have encouraged standardization of data on the campuses so that accountability can be swift and comparisons useful. These demands require a central information bank and probably a chief information officer, or CIO, such as numerous universities have begun to install. There is a powerful pull to collect all the disparate information at institutions and at some central and easily accessible source.

On the other hand, the forces pulling toward decentralization appear to be equally powerful. The first is the need to cut costs. Just as the 1970s and early 1980s were a period of political controversy, when we worked to equalize opportunities for females, for minorities, and for people of different sexual preferences, so the 1990s will be a period of financial controversy.

Education costs in the United States, Canada, and most other countries are rising about 20 percent faster than the consumer price index. Education is a handicraft, primitive industry that is labor intensive, and it uses high-cost labor at that. It is difficult to make ourselves more efficient, to run our institutions more cheaply. Students demand personal contact with first-rate intellects and it is hard to use the benefits of technology for teaching. As a result, we are a segment of the economy like the arts, like great restaurants, and a few others, where everything is still done in artful and handicraft fashion at great expense.

What this means is that to keep costs reasonably within control, educational institutions are increasingly establishing responsibility centers on their campus, giving deans their own budgets, and giving various departments and offices their own budgets. Administrators are asking deans to become more entrepreneurial, to raise money for their own enterprises. While reading some papers for the Association for the Study of Higher Education, I noticed a paper from Texas A&M that explained the achievements of something they call the senior academic business administrator, a special position in each of the schools of Texas A&M. In other words, there is a financial-and-academic-information collecting-officer assigned to each of the deans. Texas A&M, like other institutions, is decentralizing the collection of economic, academic, and other kinds of data to make them immediately available to the institutional units.

At my school, the Graduate School of Education at Penn, our associate dean, Dr. Michael Tierney, who is a wizard with computers, has increasingly taken on the role of our chief information officer. He devises budgets and collects data from other parts of the university to compare us with other schools within the university, and with other graduate schools of education around the United States. More and more of the units within each university will be increasingly driven by the need to pare costs to keep themselves efficient, and they will need to develop institutional research to accomplish this.

Another factor driving decentralization is the new technology, which all of you know about: the micros, the graphics, the profusion of software, and all the rest. I'm not alone in thinking that this will also decentralize. Peter Ewell wrote in *New Directions for Institutional Research*, Number 64, "The most important advances in micro-computers and in electronic communication promise to alter the traditional institutional balance of power with respect to

information in fundamental ways. No longer the sole supplier of decision information, institutional research is increasingly becoming only one of a number of independent players."

The advances in technology will almost inevitably give rise to an information feudalism, with semi-independent computer domains all over the campus. This could result in a kind of anarchy of information on most campuses, since sophisticated individual computer users can get into these data sets, and with increasing ease do their own studies in areas that interest them. Networking will increase this possibility. Add to this the faculty's independence and their increasing ability to gather data and assemble it for their own personal and academic uses.

These twin pulls toward centralization and decentralization will in the years ahead tear institutional research in half. It has already begun to do so. One option is to tilt toward becoming a chief information officer--the broker of all the feudal domains on your campus, a policymaker on information, a coordinator, and a setter of information standards and categories for other information collectors. Or you can form a partnership with the vice presidents or deans or other unit heads to help them with their particular data needs, with their budget projections, with their attempts to trim dollars from their budgets, and to innovate academically.

This is not an easy decision to make. The second option, unlike the CIO line role, is basically a staff role. Instead of being in the president's administration building, you will be with the local unit heads. It will require different loyalties. It will require different outlooks. The CIO will be increasingly responsible for keeping all the data networks reasonably honest, while the unit IR people will be helping individual deans sharpen the data and then bend it a little for their partisan management needs. The two roles will require different operating styles, different attitudes.

External Change versus Internal Demands

The second major development is also a twin pull with a potential for tearing institutional research in half. Institutional researchers will increasingly need to monitor and document change and novelties, especially in the outside environment. Yet they must also respond to the here and now--the internal demands of the next budget, management information system requirements, surveys and reports to agencies.

The need to document change, scan the future, and collect data from outside the campus arises from the fact that since the mid-1970s, the United States has been going through a most traumatic change. The position of the United States has been changing in all sorts of ways, and any line of data you pursue will have sharp breaks in it somewhere between 1973, when the OPEC oil cartel was formed, and 1976. U.S. society will be forced to adapt to the new conditions.

The conditions are staggering to contemplate. We are changing demographically as a nation with birth rates below replacement, the highest immigration since 1910, and a new geriatric society. By the year 2020, according to the U.S. Census Bureau, approximately 19 percent of our population will be over 65, and 9.8 percent will be over 80. Imagine a society that is one-

fifth elderly and one-tenth very old. (Believe it or not, the fastest growing group of enrollees in higher education is the over-55 group.) Colleges and universities are becoming less and less training camps for the young and more and more like public libraries, open to teenagers during the summer, and to traditional students, adults, and the elderly.

Socioeconomic changes in this country are equally profound. The American family as we know it is disintegrating before our eyes. The family that I grew up with a father working, a mother at home, and two or more children now constitutes less than 7 percent of America's families. A fourth of all babies in the United States are now born out of wedlock, compared to 4 percent for Japan. And even when children live with two parents, 66 percent of the women are working outside the home. This has profound implications and is already affecting our schools. In years to come, it will affect our colleges and universities. Young people lack adult guidance, motivation, and discipline, and this influences student behavior and student aspirations. The effects are already apparent, particularly in the black community.

On the economic scene, the United States has slipped from being the richest country in the world to fourth, fifth, sixth, or seventh, depending on the year. We have lost about 20 million manufacturing jobs to South Korea, Hong Kong, Singapore, Brazil, Italy, Portugal, and other nations. There is no longer a single radio or video cassette recorder made in the United States, nor a single baseball or pair of jogging shoes. The economic change the United States is going through will affect every segment of higher education in a general way through the tax base and in a specific way for academic schools such as agriculture and social work.

In the cultural area, the arts have become more important to many young people. The United States is becoming one of the most culturally active nations in the world. The data from Lynne Cheney's National Endowment for the Humanities shows that more people go to museums and art shows each year than go to athletic contests.

In religion, more and more young people are asking what their church can do for them rather than subscribing to whatever the priests and rabbis and ministers urge them to do. In a strange way, religion has become a consumer activity, a development that has affected every religiously-oriented college in this country.

I won't talk about the technological revolution we are living through. You know that intimately. But the fact is, the computer and all the telecommunications that can hook up to it constitute the most important change to affect education since Gutenberg's invention of the printing press. The implications are profound and we're only beginning to sense the degree of networking that can be done among colleges and universities.

Then there are the political changes. We have lived for a long time under the threat of communist imperialism from the Soviet Union, but this has suddenly collapsed. The Soviet Union is actually in danger of being dismantled somewhat the way the British empire was dismantled after World War II.

Colleges and universities, some to survive, most to maintain quality and service, and all to adapt, will need better information about the nature, scope, and significance of these extraordinary changes taking place outside the campus gates. The new conditions in the

United States will pull institutional researchers increasingly towards new forms of reconnaissance about the fit between the environment and colleges and universities. Those colleges that have the best information from people like you, that have the keenest alerting mechanism, will be able to innovate intelligently, seize new academic opportunities, capture foundations and government grants, and impress with their public spiritedness in ways that colleges that do not carry out first-rate reconnaissance on the external environment will not. Though Jim Morrison of the University of North Carolina, Rick Heydinger of the University of Minnesota, and a few others have been pointing the way, we still know relatively little about how to gather trend data, how to do sensible forecasts, and how to provide information about the rapid shifts going on all around us.

This external, future-oriented focus will be balanced by the other pull: the need to provide current data about the internal operation. This day-by-day information will continue to be indispensable. It is as vital to monitor what is going on right now inside your own universities as it is to scan the outside environment to find out what might happen to your universities in the future.

But the two processes for gathering information are quite different. One gathers data heavily from the outside to affect internal changes. The other collects data mainly about inside activities largely for external monitoring bodies such as state agencies or the federal government. It will be difficult to serve both these masters. This conflict could also tear institutional research in half.

What do these changes portend for institutional research in the 1990s? Well, I can imagine a range of possibilities. One is that the Association for Institutional Research will remain pretty much as it is now, a marvelous and polyglot body of folks who have something to do with information in many parts of our institutions. I can also imagine, I'm sorry to say, the near dissolution of institutional research as we now know it, with the work of what is now regarded as institutional research being broken up into many sections and being attached to offices of planning and finance, the offices of the deans, the president's office, the physical facilities office, and many others.

What makes this difficult to predict is that only part of your future is in your own hands and mine. The campus executives, the leaders at your university, play a large role in deciding what kind of information their institution should have, and these campus executives have a rapid turnover. Campus executives at small Roman Catholic or Baptist colleges want different kinds of information than those at elite universities or at two-year technical institutions. It will not be easy for you to shape your own future given the position that AIR people occupy in university life.

Two Observations

I would like, in conclusion, to make a couple of observations. One is that if you worry about the future of institutional research, I hope you will keep in mind that higher education is redefining almost monthly what it needs to manage itself. University administration in this country, and I presume in other highly industrialized countries, is changing right before our eyes. We have new kinds of administrators. We have new forms of governing. The budget

and priorities committee, for instance, or the strategic planning group, is increasingly being seen as an advisory cabinet government within universities. We have seen the rise of computer czars, of chief information officers. At the University of Pennsylvania, we recently hired Dan Updegrove from EDUCOM to look at our entire range of computing and informational activities at the University of Pennsylvania. Other institutions already have similar people. There are new vice presidents for enrollment management. We have suddenly realized that the admissions officers at every private institution in the United States are the chief fund-raisers, not the development people. Admissions persons bring in 50 to 70 percent of the income at most private colleges and universities, so we have stopped treating admissions officers and financial aid officers as clerks and have begun asking them to be executives like the provost or the financial officer. We have new affirmative action vice presidents. We have an increasing number of chiefs of assessment and evaluation on campus. We have assistants to the president for planning. In our finances we are moving from the world of fund accounting to a whole new kind of activity--what business firms call finance. The entire academic and administrative portfolios are in flux. So if institutional research is in flux you need to realize that virtually every other office on campus is also changing.

My second concluding observation is that we usually have more influence than we think, and more power to help shape our futures than we think. Too many of us, it seems to me, have become prisoners of social studies that emphasize the powerful social forces that shape our lives. The social sciences stress determinist causation and harp on the feebleness of leadership. And our humanities have increasingly neglected biography and similar studies that emphasize the role of the individual. But I hope that Eastern Europe makes us aware of the potential for change from ordinary individuals. Colleges and universities can be altered by institutional research officers, by first-rate provosts, extraordinary deans, or by a cadre of faculty who really care.

It is important that you see AIR as a force for influence and change and not as a victim of change. How can you do this? What should AIR be doing in the years ahead? It's presumptuous of me to suggest, but let me throw out a few things that you might consider.

What Should AIR Do?

One is to develop a kind of scholarship of your own. With all the power of the thousand people in this room, and with your colleagues in SCUP and CAUSE, and with the professors in the universities that you work at, you should be able to develop an agenda of likely informational needs for the next decade. Seize the initiative and tell colleges and universities what the information needs of the coming decade will be, rather than waiting for your presidents, your deans, and your board chairpersons to tell you what data to gather. The time has come for this organization to move from a passive and laissez-faire attitude to one of leadership in the field of information. I think there are foundations and corporations that would support such a major scholarly effort.

Secondly, it is important that you stay close to and develop ties with neighboring organizations in higher education such as SCUP, CAUSE, and ASHE. These organizations represent the scholars of higher education, the computer experts, and the planners in higher education. I think there will be all sorts of points at which you will be able to collaborate.

Last, I suggest AIR find some way to train the institutional research people of the future. It is one of the strange anomalies of this profession that you people have become powerful arbiters of policy and vital providers of information on campus, yet you come from the most diverse backgrounds and scarcely any of you have had any training for the work that you do. As most of you know, the definitions of a profession are a first-rate training program, a body of knowledge that can be mastered, some sort of test or license such as the bar examination or CPA exam to see if one has mastered the body of knowledge, and a self-policing mechanism to chastise the culprits among you. Unless AIR begins to develop a body of knowledge of what it takes to become an IR person, you will not have the opportunity to establish yourselves as scholarly professionals on your campus.

If it is true that we live in a qualitatively different kind of information society, and if brainpower and the colleges and universities that provide brainpower are the keys to the future, then it seems inevitable that information officers at colleges and universities will have a central and perhaps powerful role to play in the coming decade--not just in higher education but in shaping the civilization we live in.

So on the one hand, you face a tearing asunder of your profession, a feudalization of your profession. On the other hand, the work you do has never been more important if this society and other industrial societies are to remain strong and free.

I counsel you to be brave, to think boldly and innovatively, and to remember that the future isn't what it used to be. Recall again the words of your former president, Laura Saunders, "The analyst must do all of this rapidly, accurately, and with good humor." I would underscore the good humor.

A Personal Retrospective on the Development of Institutional Research
(general session)

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(This is an edited record of an address presented in the Grand Ballroom of the Galt House in Louisville, Kentucky, on Tuesday morning, May 15, 1990.)

The theme of this session, "Back to the Future," suggests that somebody should look back. My own history includes some encounters with what is now called institutional research, beginning nearly sixty years ago. I would like to recall some of those encounters and suggest what we all might learn from them, or at least what I think I learned from them at the time.

In the 1930s, when I was working on my doctor's degree in psychology at the University of Minnesota, I had a job as a research assistant with the Committee on Educational Research. One day the president of the university said he wanted the committee to survey the economic and occupational status of those who had graduated from the institution during the Depression years. So we sent a questionnaire to about 14,000 students who had graduated between 1928 and 1936. What we learned from that survey is important for us to remember today. A baccalaureate degree is not an insurance policy against the effects of an economic depression.

My first major encounter with institutional research was during the three years I was employed by the General College at Minnesota to direct an extensive questionnaire survey of former Minnesota students. The General College was a new enterprise. It targeted a group of students that hitherto had not received specific attention from any college of the university--mainly students from the lower half of their high school graduating class. The General College curriculum addressed the present and future needs of these students with respect to vocational activities, home and family life, social-civic affairs, and personal life. All of its courses dealt with contemporary aspects of life. The central purpose of the survey was to help faculty members decide what to teach. What did the faculty want to know about the activities of young adults, their interests, the problems they faced, what they wanted to know, their attitudes and opinions? Have you ever heard *of using a survey of former students to determine the curriculum and the content of courses? It seemed like a good idea.* The results were directly reported to faculty members who said they wanted the information.

The other aspect of this survey--which I think may be an all-time record--is that the 52-page questionnaire was returned by nearly 70 percent of those who received it. On average it took most people an hour to an hour and a half to respond to the more than 1000 items. Why did they do it? The questionnaire was very attractively printed and illustrated; its content was obviously relevant to the lives of the young adults who received it; it came from a high prestige source; and it had a commendable purpose. People who received it said such things

as: "I showed it to six other persons"; "My husband and I found it interesting and read it from end to end"; "It took a long time to fill out, but it was a pleasure." In fact, nearly 100 of the more than 900 respondents asked if they could have a copy to keep. We used a good cover letter, two follow-up postcards, then a two-page letter and two more follow-up postcards. We did everything right, and the result was very good. *I'm sure the survey's success was properly attributable to the extensive planning and careful execution of the whole enterprise.*

Many years later, at a time when most people considered themselves lucky to get a 50 percent response to a much shorter questionnaire, it occurred to me that the reason we got such a fantastic response to such a long questionnaire might have been that *we sent it before the invention of television*!

In 1947 I joined the faculty of Syracuse University. For the first five years my main job was in the Evaluation Services Center, and during four of those five years, I was also a special assistant to the chancellor. Syracuse was just embarking on an extensive self-survey and the Evaluation Center was to provide technical and coordinating services for all of the survey committees. Maurice Troyer, director of the Evaluation Center, directed the self-survey project and I served as assistant director. The trustees had asked the chancellor for a survey of material needs that would be useful in projecting a financial plan for the next five years. The chancellor pointed out that no financial plan could be projected without also first assaying the quality and quantity of the educational program and services--curriculum, staff, library, personnel, administrative organization, plant and facilities, publications and public relations. In projecting needs, the university would also have to determine the size and nature of the student body it planned to serve.

During the 1947-48 academic year, about one hundred faculty members and administrators were actively engaged in the self-survey. At the end of the academic year, each survey committee prepared a detailed report of its activities, its evidence, and its recommendations, and each report was reviewed by the chairmen of all the other committees. My recollection is that nobody got any time off for the hundreds of hours put into this self-survey.

The committee reports, in total, ran to more than 1000 pages. I was asked to prepare a summary report of the survey that would be circulated among all the committee members for information and comment. In the fall of 1948, representatives of the survey committees met with the university's top administration to discuss the findings and develop plans for translating recommendations into action. This was a two- or three-day meeting at a university lodge in the Adirondacks. Basically, the faculty members said to the chancellor, the vice chancellor, and the business manager, "Here are the survey recommendations; what are you going to do about them?"

What happened next at that meeting in the Adirondacks was a very interesting and sharp difference of opinion about what to do with the survey reports. The group agreed that the detailed committee reports would be on file in the Chancellor's Office and in the Evaluation Center, and that authorized personnel could see them. As to any wider circulation, some people argued that the material was too sensitive. The Syracuse newspapers would have a field day if they got hold of the reports. Others argued that the benefits of the survey would be lost if the results were not shown to the entire faculty. Some suggestions were made for

modifying a few paragraphs of my summary report, and I was asked to prepare a revised and somewhat shorter version.

The chancellor decided to issue a report to the faculty. We got galley proofs of the text and they sat on the chancellor's desk for a couple of weeks. He made a few additional changes, but then he left town for a month. So I took the galley proofs off his desk and sent them to the printer. When the report was printed, I decided to mail a copy to some of my friends who might be interested--Ralph Tyler, Earl McGrath, Al Eurich, T.R. McConnell, Ruth Eckert, and a few others. Not long afterward, while the chancellor was still out of town, several people approached him at a conference to tell him, "Bill, I just read the report of your self-survey and I want to congratulate you and the university. Any university that can make such a forthright appraisal of itself must have good faculty morale and confidence in the future." At that time, of course, the chancellor did not know the report had been published! Anyway, the result was that the report was very widely circulated among the faculty, and for the next few years, several departments sent copies of it to persons they were hoping to recruit.

I do not advocate the directors of institutional research take the sort of risk I took! *However, I do think it is very important to understand that, in institutional research, there are no secrets.* That is especially true today with computers and access to whatever is stored in them.

Three years after the self-survey, the chancellor asked if we knew what had been done about all the survey recommendations. How many had we acted on? Could we do a follow-up? We could and we did, but I persuaded him that if he was willing to wait a few months for an answer, we could use this opportunity to analyze as well as count whatever actions had been taken. One of the research assistants in the Evaluation Center had been thinking about possible dissertation topics. A follow-up study of the self-survey recommendations seemed like an excellent topic to him; and indeed it was, for Arthur Browne wrote a very thorough and creative dissertation. From the complete reports of each committee, he identified some 500 recommendations as calls for action of some sort. He then classified each recommendation along six dimensions: (1) the area or topic, (2) the type of action called for, (3) how much action had been taken, (4) the probable cost of the action, (5) the intended beneficiary of any action, and (6) the level of responsibility required for any action or decision. By cross-tabulating the results of these classifications, Browne was able to answer such questions as: What happened to recommendations related to curriculum and instruction that could be implemented at the faculty or departmental level? What happened to recommendations for providing a facility, involving major cost that would have to be authorized by the Board of Trustees? Was there a predominance of recommendations for which the faculty itself was the intended beneficiary? In short, the follow-up study analyzed the dynamics of action as well as the impact of the self-survey on changes at the university. *I tell this story to illustrate the value of having institutional research connected to graduate programs. It can enrich the quality of analysis and enable students to learn something important about higher education.*

A few years after the self-survey was completed, the university was due for an accreditation review by the Middle States Association. Since we had already done a very thorough self-study, very little new information was needed. One Thursday afternoon at about four, I received a phone call from the vice chancellor. He said that most of what the Middle States Association wanted had been assembled, but could I prepare a response to two very broad

questions? He did not want a detailed answer, just an overall response of a few pages. The questions were: What are the objectives of Syracuse University? and What are the directions and changes the university hopes to take in the next ten years? He said there would be a meeting of administrators in his office at eight thirty Monday morning, and could I please have something to report at that time. I arrived with my response on yellow scratch paper, and since no one could possibly read my handwriting, I read what I had written to the group. When I finished there was no immediate response, just silence. Finally, one of the administrators said, "I can't think of anything to add or subtract from what you have read." We had the statement typed and circulated to other people for comments and revisions. What subsequently appeared in the report to the Middle States Association was about 95 percent verbatim of what I had written. I do not tell this story to suggest the value of having majored in English composition in college. I tell the story for a much more important reason. *If the office of institutional research is indeed a center of information about an institution, then any director of the office who has been on the job for at least a few years should be able to respond to the two questions I was asked. The director should be in tune with the spirit of the place and with its aspirations.*

For several years, I chaired a chancellor's committee on long-range planning. At one meeting, when we were reviewing data on instructional costs, one program stood out because its costs per student or credit hour were about twice as high as those for any other instructional program. This was the College of Home Economics. The reasons were obvious: high level senior faculty, low student enrollment, and high costs for equipment and laboratory work. We also knew that just down the road about forty miles Cornell University had a large, nationally distinguished, state-supported college of home economics. The "facts" surely suggested abolishing the program at Syracuse. *But "data" are seldom sufficient for administrative decision-making, because the data do not include personalities and politics and history. From this and many other experiences like it over the years I have developed some caution about associating institutional research too explicitly with administrative decision making.* I prefer to associate institutional research with *learning.*

A few years after I joined the faculty at UCLA, Chancellor Franklin Murphy asked me to review the work of the Office of Institutional Studies and recommend what should be done next. The vice chancellor appointed an advisory committee to work with me on the assignment. Clearly, there was an urgent need to create an integrated information system and to operate it in such a way that its power and utility would be sufficiently obvious to ensure its continual use for planning, quality control, projections, and other relevant analyses. *We recommended that the office responsible for developing and operating information systems be part of a larger staff or office concerned with planning, organization, and operations.* The office that was subsequently created has evolved over the years with a high level of capacity, sophistication, and service under the direction of Adrian Harris. Another recommendation, which I favored but was not regarded as feasible by the committee, was to have a parallel office of higher education research and evaluation. I felt that ongoing evaluation studies would be a healthy balance to the accounting activities of the planning office. What I encountered was a deep-seated belief at UCLA that research was exclusively a faculty enterprise. Evaluation was simply a staff or service enterprise. So a parallel or loosely connected evaluation and research office was never created.

In all these stories about my personal encounters with institutional research and evaluation, there has been an underlying concern with what I would like to call the "human side" of institutional studies. When we develop our more sophisticated measures, or indexes, or indicators, we may be tempted to think of them as impersonal and objective. But they are not. They are, at bottom, descriptions of human behavior. I looked at the titles of the now more than sixty issues of *New Directions for Institutional Research* and I think all of them had something to do with human behavior.

In all cases what's important is how we define the variables. For example, about ten years ago I constructed, pretested, and produced a set of measures of the amount, scope, and quality of effort students put into using the resources and opportunities college provides for their learning and development. This concept, "quality of effort," has now become a major variable in new research on student outcomes. I think of a questionnaire as a form of test. What are you measuring? And with what degree of reliability and validity? My involvement in educational measurement over many years leads me to emphasize my firm belief that *the value of answers to a questionnaire does not depend on the quantity of respondents; it depends primarily on the quality of the questions.*

It is my impression that the last three decades of professional development in AIR have emphasized the importance of accounting and computer programming for creating and operating a knowledge network about the institution. Institutional research is one important part of a larger domain I would describe as higher education research and evaluation. These two interests have, to some extent, led separate lives. I think it is true that the major centers for the study of higher education have little or no connection with the institutional research offices at their home institutions. Whether various connections are feasible organizationally depends on the traditions of the individual institutions. One can, however, encourage the steps that have been taken to facilitate conversation and other contacts between AIR, ASHE, and Division J of AERA.

In such contacts and connections I would note the importance of philosophers and historians because I believe that educational policy is best understood in the context of history and values. One should know what a college is, and how it evolved over a long history. What a college does, of course, reflects the society that supports it. We have a vast number of specializations because science required them. We have a vast number of vocational training programs because the society needed skilled workers and professionals. When the Soviets orbited a satellite we poured money into the training of engineers, scientists, and mathematicians. And now, since we don't have any money, we are worried about the Japanese and the emerging European market, so we need more people trained in business. We are, they say, living in a global economy, and we must learn to compete successfully in it. There is abundant political and patriotic support for this purpose, and if it becomes the dominant value or bottom line for higher education in the next decade or so, it will influence what is offered, how it is offered, and who pays for it. It will also determine how and with what measures we judge the progress and the benefits of higher education. But suppose this is not the only bottom line. *Suppose that the quality of higher education and its contribution to our future does not lie primarily in preparing people to compete successfully in a global economy, but rather in preparing people to live responsibly in a global community. If the bottom line is not the*

bank balance in the nation, but the balance of people and resources in the world, then AIR and others will need to create a new set of indicators to measure our progress and performance.

If one of the functions of AIR is to stimulate debate, discussion, analysis, and introspection about the operations of our institutions - their purposes and programs, their policies and procedures - and if that function is pursued vigorously, then the simple fact that AIR exists is good reason to hope and believe that higher education will continue to be adaptive and effective.

A Fundamental Challenge for the Institutional Research Profession
(general session)

(This paper was presented in the Grand Ballroom of the Galt House in Louisville, Kentucky, on Tuesday morning, May 15, 1990.)

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Introduction

Many practitioners of this specialty, see institutional research as an applied profession with an emphasis on data handling and policy analysis for higher education institutions. According to Fincher, institutional research in the 1980s "is best described as a professional, technical specialty with strong resources and capabilities for policy-related research in institutions of higher education" (Fincher, 1985). Peterson and Corcoran conclude that institutional research has developed into "a primarily management-oriented, applied, data-handling, analysis, and research function" (Peterson and Corcoran, 1985).

I will argue that as an applied profession, institutional research lacks a scientific base. I will also argue that institutional research is confronted with the fundamental choice either to develop such a scientific base for itself, or to drift away from the fundamental values that belong to the academic attitude to which institutional research is oriented.

My personal preference would be to accept the challenge to develop a scientific base. A scientific base will increase the legitimacy and the academic standing of institutional research. However, we should not forget that science cannot, by definition, offer an absolute and final suggestion on how to proceed in a practical context. As an important epistemological argument (discussed below) states, a scientific base can never provide a definite reason to design and implement practical solutions.

There is, of course, another viable option--to limit the activities of the institutional researcher to collecting and analyzing data on the performance and the environment of a higher education institution. But this option worsens the threat that scientists within higher education will not regard institutional research as a profession equal to their own (scientific) activities, and this may impair the legitimacy of policy suggestions developed by institutional researchers.

When institutional administrators with limited authority are forced to seek the cooperation of the scientific professionals within their institutions to implement institutional policies (as is the case in Western Europe), the low academic standing of institutional research may create legitimacy problems. Institutional administrators will have difficulty convincing the scientific

professionals within their institutions that the policy suggestions developed by institutional research are worthwhile. Instead, these policy suggestions may be brushed aside. Scientific professionals will argue that the ideas of institutional researchers cannot be accepted because they lack the stringency of scientific analysis.

Can Institutional Research Develop into a Science of Higher Education?

Already in its early days, institutional research was confronted with the fundamental question of whether it could develop into a *science* of higher education institutions (Dyer, 1966). According to Dyer, institutional research "had nowhere to go if it remained purely operational" (Fincher, 1985). Institutional research should, instead, try "to fit the problems of particular institutions into some sort of evolving generalizations" (Dyer, 1966).

Fincher notices that Dyer's goal to develop a science of higher education institutions has not been achieved so far in the history of institutional research. "The efforts of institutional research to solve institutional problems and to study internal processes are not guided by a conspicuous network of hypotheses and conjectures that could be called a theory" (Fincher, 1985).

Fincher also claims that the object of study of institutional research "cannot easily be described by nomothetic or lawlike characteristics," and that institutional researchers are better able "to analyze and interpret specific events and processes within their institutions than . . . to explain complex institutional behavior in theoretical terms." His conclusion is that although "a more positive attitude toward theory-related research would accomplish much in the continued development of institutional research, . . . the merits of institutional research depend not on its scientific underpinnings but on its relevance and influence in decision and policy making" (Fincher, 1985).

Fincher is optimistic about the future of institutional research, but he may be too optimistic. Taking into consideration that most institutional researchers are skeptical about developing institutional research into a science, I think the future of this professional field might be characterized by a decrease of legitimacy. The suggestions institutional researchers make in the context of decision and policy making may be regarded with increasing indifference and even mistrust.

Because it lacks a scientific base, institutional research may in the future be considered a management-oriented data collection activity that has little to offer in terms of real scientific analysis. Its relevance and influence in institutional decision making could therefore decline rapidly, especially as academic disciplines with a theoretical basis (like organization theory and economics) start to study higher education institutions more seriously.

Peterson and Corcoran (1985) suggest that the development of institutional research requires an integrative framework in which various disciplinary insights are combined. I am convinced that this framework can only be designed when institutional researchers accept the challenge to approach their object of study with a scientific attitude.

Is Institutional Research a Successful Profession?

Many institutional researchers consider their field of study a profession, and are apparently convinced of the success of their professional activities and outcomes. In this they may, however, be somewhat naive, for the literature on the status of professional expertise makes it clear that the professions in general are presently confronted with a crisis of confidence and legitimacy.

During the 1960s, the professions were held in high esteem. The professions were expected to define and solve all our problems, be they in the field of health, crime, city planning, social work, or education. In 1963, the journal of the American Academy of Arts and Sciences, *Daedalus*, devoted a special volume to the professions, proclaiming the triumph of the professions in American society: "the day is coming when the 'knowledge industry' will occupy the same key role in American economy that the railroad industry did a hundred years ago.... America has become more cognizant of the professions, and more dependent on their services, than at any previous time in our history. Thorstein Veblen's sixty-year-old dream of a professionally run society has never been closer to realization" (Lynn, 1963).

The 1980s show quite another picture. Confidence has disappeared. Several problems and trends (the deteriorating cities, the growing ecological crisis, the increase of poverty, the rising costs of medical care, the decreasing quality of education) seem to be related to the professional practices that were called upon to resolve them. The definitions and solutions advocated by various groups of professional experts have appeared to be ineffective. The solutions presented by the professionals have had unanticipated consequences, sometimes worse than the original problems (Schon, 1983).

As a result, the professional claim to a monopoly of relevant knowledge has been challenged. Professionals have failed to live up to the expectations they created. In fields as diverse as city planning, housing, criminal justice, welfare, and transportation, policy suggestions designed and advocated by experts often did not solve the problems they were addressing.

An important reason for this failure is that the solutions were often derived from poorly defined theories or else were not related to theories at all. Many professionals now argue that their knowledge is mismatched to the practical tasks they are supposed to accomplish. This gap between professional knowledge and societal expectations is one that Harvey Brooks had already noticed in 1967: "The dilemma of the professional . . . lies in the fact that both ends of the gap he is expected to bridge with his profession are changing so rapidly: the body of knowledge that he must use and the expectations of the society that he must serve" (Brooks, 1976).

Given the crisis of confidence in the professions, the complacency of institutional researchers concerning the professional status of their field may not only be somewhat naive, but also self-destructive. If institutional researchers fail to recognize that they are confronted with the same challenge regarding the relevance of their knowledge base as other professionals, they may soon suffer a complete loss of legitimacy. To avert such a disastrous surprise, it is time for institutional researchers to analyze the status of their professional knowledge.

The Empirical-Analytical Approach of Social Science Research

In this section, I sketch the empirical-analytical approach of social science research. I am convinced that this approach should be the scientific base of institutional research, as it should be of most other forms of research in the social sciences. Unfortunately, because institutional researchers have paid little attention to this approach, there has been little discussion regarding the knowledge base of institutional research.

The empirical-analytical approach of social science research should not be confused with an uncritical imitation by the social sciences of what sometimes are supposed to be the distinctive characteristics of the natural sciences. Such an imitation would, as Medawar rightly argues, lead to an "unnatural" scientific approach characterized by the wrong belief "that measurement and numeration are intrinsically praiseworthy activities; by the equally wrong belief that facts are prior to ideas and that a sufficiently voluminous compilation of facts can be processed by a calculus of discovery in such a way as to yield general principles; and by the uncritical faith in the efficacy of statistical formulae . . . the use of which is in itself interpreted as a mark of scientific manhood" (Medawar, 1984).

The empirical-analytical approach of social science research has little to do with such an "unnatural" scientific attitude, although the critics of the empirical-analytical approach sometimes seem to think so. These critics incorrectly claim that the empirical-analytical approach is "positivistic" and "reductionistic," implicitly assuming that the empirical-analytical approach indeed is a simple imitation of some of the methods of the natural sciences. Moreover, they show little understanding of the philosophical and epistemological underpinning of the natural sciences. As I will indicate below, this critique misjudges the leading principles of the empirical-analytical approach of social science research.

Theory design. What then are these leading principles? The first principle concerns the obligation to design theories properly. Theories are the vehicles by which we try to grasp the complexity of the world around us. When designing theories, we reduce the complexity of reality. We assume certain regularities and we also omit other regularities, which allows us to formulate our assumptions. As Popper has stated, designing theories, in this sense, can be characterized as "the art of systematic over-simplification--the art of discerning what we may with advantage omit" (Popper, 1982).

A crucial quality of the theories we use to try to understand reality is that these theories should be falsifiable. A theory that is not falsifiable does not provide information, simply because, although it may always be in accordance with the facts, it does not indicate when it may be supposed to hold and when not. A statement "It will rain or not rain here tomorrow" may be correct, but it cannot be refuted and it does not give us information. Theoretical statements that cannot be incorrect when confronted with reality do not help us to understand reality.

Another quality of our theories concerns their internal consistency. Theories should be so designed that one cannot deduce from them both a statement about reality *and* the negation of that statement. To refer again to Popper: "A consistent system . . . divides the set of all possible statements into two: those which it contradicts and those with which it is compatible

(Among the latter are the conclusions which can be derived from it). This is why consistency is the most general requirement for a system, whether empirical or nonempirical, if it is to be of any use at all" (Popper, 1974).

The requirement to design theories that are internally consistent holds (as can be seen in the citation from Popper) for all theoretical systems, whether they are normative, mathematical, or empirical. For empirical theories, moreover, another requirement is of extreme importance: the requirement to design theories that also are externally consistent. This requirement implies that statements about observable phenomena that can be deduced from theories should not contradict the observations. When such contradictions are found (and cannot be removed), the theoretical system from which the statements are deduced is refuted, and must be replaced by another, better theory.

Accepting the falsificationist approach. The above mentioned considerations indicate the second principle of the empirical-analytical approach of social science research. This second principle includes the acceptance of a falsificationist approach to social science research: when a theory is found to be externally inconsistent, it is judged to be falsified, and we should try to replace it by another theory.

The second principle also implies the rejection of instrumentalism, the doctrine that scientific theories are no more than tools to enable us to act successfully. The instrumentalist position allows the acceptance of a theory that is internally or externally inconsistent, as long as it is applicable. Such a position is not acceptable for those who take the empirical-analytical position, for their ultimate criterion is not the applicability of a theory but the endless search for truth (Popper, 1983).

The two first principles mentioned above allow us to formulate two further principles on how to proceed when doing social science research. As I indicated before, a theory that accords with the facts but does not specify when it is and is not supposed to hold is not informative. Such a theory is said to have an empirical content of "zero": it is not possible to deduce from it one single statement that could be confronted with statements about observed phenomena. Along the same lines, it should be self evident that the more a theory excludes (i.e., the more statements about observed phenomena that are not "allowed" by the theory), the better the theory is (i.e., the more the theory says about the world around us). Such a theory has a large empirical content.

Maximize empirical content. The third principle is that social science researchers should try to design internally and externally consistent theoretical systems that have as large an empirical content as possible. Social science researchers should strive to formulate theories of which the class of possible falsifiers is as large as possible.

Universality. The fourth principle can be directly related to the third. In their striving to formulate theories with a large empirical content, social scientists should try to deduce from these theories strictly universal hypotheses that can be confronted with reality. These universal hypotheses should be derived from a consistent theory that should also specify under what conditions the hypotheses are supposed to hold. Universal hypotheses are far more

interesting than singular or "particular" hypotheses, exactly because the class of possible falsifiers is much larger when universal statements are used.

Together the four principles of the empirical-analytical approach of social science research indicate that empirical theories are the best mechanisms we have to try to understand reality. Because empirical theories are formulated as internally and externally consistent systems of universal statements, and because they are designed in such a way that their empirical content is as large as possible, we may expect that these empirical theories offer us the best possible intellectual grip of the world around us. Thus, if we want to try to solve problems in our environment, we should try to make use of these theories.

The Professional Knowledge Base of Institutional Research

According to several authors, professional knowledge is defined by a number of characteristics. Moore, for instance, has argued that the two primary bases for specialization within a profession are first, the substantive field of knowledge that the specialist professes to command; and second, the technique of production or application of knowledge over which the specialist claims mastery (Moore, 1970).

Similarly, Schein mentions three crucial components of professional knowledge: first, an underlying discipline or basic science component upon which the practice rests or from which it is developed; second, an applied science or engineering component from which many of the day-to-day diagnostic procedures and problem-solutions are derived; and third, a skills and attitudinal component that concerns the actual performance of the client, using the underlying basic and applied knowledge (Schein, 1973).

These authors indicate that the knowledge base of a profession is to be found in basic science, or at least in a scientific body of knowledge about the field with which the profession is concerned. Without such a scientific base, professions cannot claim to be more than arbitrary approaches to specific aspects of reality. Without a scientific base, professions lack the legitimacy to impose their solutions upon the practical problems they want to address.

As mentioned previously, scientific knowledge has to be understood as the collection of empirical theories that are formulated as internally and externally consistent systems of universal statements with as large an empirical content as possible. A profession based on such a collection of theories has at its disposal a general body of knowledge, which is formulated in universal terms. Professionals can apply this *general* knowledge to *specific* and concrete circumstances. "Professionals apply . . . general principles, standardized knowledge, to concrete problems" (Moore, 1970).

Glazer has made a distinction between "major" and "minor" professions. Major professions are grounded in systematic, fundamental knowledge; minor professions lack this foundation. Minor professions are threatened because the academic disciplines from which a foundation could perhaps be developed are superior in status to the professions themselves. The prototypes of the major professions are medicine, law, and engineering. Examples of minor professions include social work, education, and town planning (Glazer, 1974).

I fear that institutional research has to be classified as a minor profession. Institutional researchers so far have not been able to find a collection of empirical theories that they could use as a general body of knowledge for application in specific circumstances. Even worse, institutional researchers apparently think that their profession should not be founded on basic science, but on the techniques of data collection and data analysis. Institutional researchers often claim that their profession has to be seen as a data-handling function based on specialized data-handling techniques.

This inclination to be satisfied with the status of a minor profession, or to even deny the importance of a real scientific base, seems to be the fundamental threat that institutional research will have to face in the future. If institutional researchers keep on convincing themselves that the elegance of data-handling techniques offers a solid enough basis for their profession, they should not be surprised when this profession starts to pine away. If institutional researchers do not accept the challenge that has been put forward to all professions (i.e., the challenge to reconsider the strength of their scientific base), they perhaps will stop being a profession. If institutional research wants to maintain its professional status, it must focus on the design and the testing of empirical theories--in the hope that by doing so a scientific base can be found.

The four principles of the empirical-analytical approach of social science research can be helpful here. If we want to build up our scientific knowledge, we should use the epistemological principles that have proven to be successful.

If institutional researchers would embark upon this task of designing and testing theories there is one point, however, that should be kept in mind. Empirical theories cannot offer anybody in any profession a *final* argument on how to act in a specific practical context. Empirical theories provide us with mechanisms to understand reality. However, such an understanding is reached by assuming certain regularities about reality and leaving out many other aspects. Designing theories indeed is the art of "systematic over-simplification".

The notion that empirical theories (perhaps not yet but one day), will be able to provide exact knowledge on how to act in a practical context is referred to as "scientific determinism." The general idea of scientific determinism is that the world and humanity can eventually be completely understood, and that it is the task of science to acquire the level of knowledge that will enable us to predict with complete exactness any future state.

Popper has introduced the so-called "demon of Laplace" to explain why the notion of scientific determinism is not correct. "Laplace believed that the world consists of corpuscles acting upon one another according to Newtonian dynamics, and that a complete and precise knowledge of the initial state of the world system at one instant of time should suffice for the deduction of its state at any other instant" (Popper, 1982). Laplace knew that this kind of knowledge is superhuman. This is why he introduced the fiction of a demon: "a superhuman intelligence, capable of ascertaining the complete set of initial conditions and the laws of nature . . . the demon would be able, according to Laplace, to deduce all future states of the world system" (Popper, 1982).

Laplace, we now know, was wrong in assuming a deterministic world. Epistemology now teaches us that we will never be able to establish all relevant initial conditions and to formulate all relevant theoretical laws, to formulate exact predictions. As Popper has said, we could never predict the creation of a work as Mozart's G minor symphony, however well we study Mozart's brain, paper, pen, and environment (Popper, 1982). Our theories are simplifications of an endless complex reality, and they can only be mutually compared. Our theories, moreover, are attempts to try to find the truth by testing what is not true. But truth remains an ideal. If we would reach it, we could not know it.

Professionals who might think that a scientific base for their profession could offer them exact prescriptions on how to act in a practical context would be making the same mistake as Laplace. This belief disregards the epistemological principle that theories, by definition, are simplifications and hence can never offer exact predictions or prescriptions. When one deduces from a theory certain prescriptions on how to act in a practical context, one will always be surprised by the initial conditions not addressed in the theory; one will always be confronted with unexpected consequences.

The lesson to be drawn from this is that professionals should be modest when basing their applications on empirical theories. They should be willing to learn from changing circumstances; and they should try to design solutions that are flexible, leaving open other options if a first one proves to be ineffective.

Such a modest professional attitude comes very close to the characteristic approach of what Popper has called "piecemeal social engineering." A piecemeal social engineer knows how little he knows. "He knows that we can learn only from our mistakes. Accordingly, he will make his way, step by step, carefully comparing the results expected with the result achieved, and always on the look-out for the unavoidable, unwanted consequences of any reform" (Popper, 1969).

Conclusion

The future of the profession of institutional research, I have argued in this paper, may hold the unpleasant surprise of a loss of legitimacy. Such a loss may result from the present-day preoccupation with the techniques of data handling. While all professions are confronted with a crisis of confidence, and while they are all being challenged to reconsider their knowledge base, institutional researchers apparently are satisfied with the notion that their activities are undertaken with a certain technical elegance.

If institutional researchers decide to counter the threat that their profession may pine away, they will have to accept the task of finding a scientific knowledge base. They will have to make use of the empirical-analytical approach of social science research, accepting the principles that are included in this approach, but realizing that even a scientific knowledge base cannot provide final solutions for practical problems.

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From the Past for the Future
(presidential session: part one)

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(This is an edited record of an address presented in the Grand Ballroom of the Galt House in Louisville, Kentucky, on Wednesday morning, May 16, 1990.)

AIR traces its beginnings to ideas expressed at an Institute on Institutional Research luncheon held by the Southern Regional Educational Board on July 14, 1960. A group of professionals interested in institutional research followed up by holding a meeting the following year in March at the Morrison Hotel in Chicago before the conference of the Association for Higher Education.

The earliest years of AIR were marked by a specific intent to remain small and informal. This, then, is the first point that I want to make: our association is built upon the strength of friendships, understandings, and interpersonal relationships. We started as, and still are, people who like people. The networks and bonds we have forged over the years are fully as important as our specific body of knowledge. The paradox is that the forum now regularly attracts over one thousand members, and close friendships among all members are impossible. In addition, as we seek to provide services to those who perform the institutional research function, we continue to grow in membership--as we should.

Within this organizational framework, the regionals with their smaller meetings become the source for many lasting friendships. Since the costs of attending regionals may be less, they offer an opportunity for many entering professionals to learn about institutional research (IR). Regionals are also a place where we can review how IR fits in with related disciplines, since each regional develops a discipline focus based on its specific situation and the combination of issues within its region.

We need to become more involved with the linkages we have with our regionals and in the exchange of mutual support. While all of us have had the opportunity to attend this forum, we should also be involved in our regional activities and in collegial networks that link us to colleagues beyond the direct institutional research function.

It seems to me that the second point inherent in our first 30 years as we come of age is that we never have had a clear understanding of what we do for a living. Arthur Adams, president of the American Council on Education in 1960, has noted that: "Those actively engaged in institutional research are, naturally, proponents of its value. They are not entirely agreed, however, on its scope or functions" (Brumbaugh, 1960). John Stecklein (1966), when president of AIR in 1966, noted that we were divided between the need to do "intensive, theoretically-oriented, long-term research" and the need to be "an extension of the president's or executive

vice president's office with the primary goal of finding how to use financial resources to better advantage". I think we should be proud of the fact that we are both *institutional* and *research*. This debate continues today and I am convinced that it should.

It is a strength of our association that we work to discover results from research and to apply these truths to the nuts-and-bolts problems that limit the quality of our institutions. We need to identify the information needs of our institutions and to undertake research that provides better information in support of management, policy analysis, and planning.

With our constantly changing and expanding knowledge, we need to provide for both the theoretical and the practical aspects of our profession in our meetings and in our professional development. As for our publications, we need to sustain the excellence of our research journal, *Research in Higher Education*, while we publish more practical applications of IR. This expansion may involve strategies such as expanding the *Professional File* or creating a new publication.

The third issue I would like to discuss, as I consider our first thirty years, is that professionals in our field have always wanted to be leaders in improving the quality of our institutions and higher education in general. We have often looked to our college and university presidents and others for indications that we were making a difference, that we were studying the correct issues. We have essentially become part of the middle management of our institutions, but that does not mean that we are not also important leaders in our institutions--quite the contrary. We have greater opportunities to be leaders than most because we work with information about issues critical to postsecondary education. This information, if it is reliable, relevant, and timely, makes for an extremely strong power base.

We cannot wait, however, for others to come and ask us to be leaders; we need to know our institutions and seize opportunities as they arise. We must develop and use leadership skills in our institutions.

It is easy to talk about leadership, but we should be aware of serious future challenges in our profession. Two issues identified by the transition committee are directly related to these challenges:

1. Financial pressures on higher education institutions may well restrict the central support functions of middle management to include many of the functions performed by our members.

2. Computer technology will increasingly allow administrators to create and directly access their own data, reducing their reliance on others for analyses.

These challenges require that we not only become leaders and competent managers, but that we also develop a base of interpretive knowledge relevant to our institutions. I am convinced that of the multitude of general issues in higher education, the most critical underlying need is to improve the quality of our institutions. This is consistent with our function to sustain quality operations between self-studies. It is consistent with our purpose to "benefit, assist, and advance research leading to improved understanding, planning, and operation of

institutions of post-secondary education" (Article II, AIR Constitution). My conclusion is that we need to learn more about becoming better leaders and about the available strategies for improving the quality of our institutions.

Let me summarize my three points and relate them to why I invited Larry Sherr to return to the Forum to talk to us today.

1. This association has a strong basic people orientation--"high tech with high touch" if you agree with Nesbitt. Larry proceeds on the premise that people play an important role in achieving quality.

2. This association has a sense of purpose accompanied by a constantly changing and expanding body of knowledge. Both the practitioner and the scholar have made contributions to institutional research. Larry will talk about improving quality as a never-ending process and provide information that transcends and applies to the breadth of our specific functional areas--information that has been established and documented as practical in numerous studies.

3. Third, the members of this association are sensitive to the need to be leaders and to deal with critical issues in their institutions. I believe that quality in our institutions is a critical issue and that we need to become leaders in developing quality. Larry will talk about how to improve quality without spending more money; that is a message that is always of interest.

Larry, above all, is a teacher with a vision on how to achieve higher quality in our colleges and universities. I am delighted to have him here to share his vision with us as we prepare for the next thirty years.

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Quality in Higher Education--A Verb, Not a Noun
(presidential session: part two)

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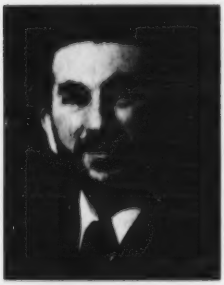

Institutional researchers need to play a new role to help universities and colleges improve the quality of their programs. Your current role of gathering, collecting, analyzing, and distributing information is an important and continuing one. Now you need to become problem consultants. You are located in a key spot in your organization, and have the knowledge to identify problems and the ability to suggest an array of alternatives for improvement.

Many institutions are using a management system based on a failed philosophy. We have imitated America's largest corporations in the way we administer ourselves--adopting such things as levels of management (i.e., supervision and a formal chain of command). We have forms, reports, and data, much of which we do not need or use. We have checks and approvals (i.e., inspections). We have elaborate and formal evaluations that very frequently have no constructive basis. We have competitive bidding that gets us the cheapest materials but frequently increases our costs. We have elaborate planning systems that often do not work well. We have inflexible organizations that seem to be more in love with procedures than anything else.

These are the reasons that many U.S. businesses are unable to compete in the global economy. There are alternatives. Last year, I presented the work of W. Edwards Deming. I could have mentioned others, particularly Joseph M. Juran, whose models have worked better than other management models used in the United States in the 1980s. I believe these models will continue to outperform other management models used in American industry in the 1990s and in the next century. These models have *values* that are more compatible with higher education than the values of the current management system.

I work in a team with two other University of Kansas professors, Dennis Karney and Steve Hillmer. Many of their ideas are contained in this paper. Also I want to thank Ellen Chaffee, who is responsible for the expression "a verb, not a noun."

When we talk about quality, the first thing that comes to mind in both higher education and business is money. We can provide or improve quality if only we had more money. Consider the people who provide the money. Our revenues come from students and parents, state and local governments, the federal government, alumni, friends, businesses, and philanthropic institutions. In business, these sources are called customers or perhaps investors. Educators do not seem to like these words. Alternatives include clients, consumers, patrons, benefactors, buyers, purchasers, shoppers, and even end users. Perhaps we should call them "those folks."

It is "those folks," plus some other users of our products and services including employers, other academic institutions, and academic peers, who must be the focus of our discussion. In the past year, almost every leader in higher education has made a statement claiming that "those folks" are not providing us with enough money.

What does the word "quality" mean to you? Consumers describe quality by the characteristics of the product or service: it works; it is durable; it is available. We want good service, courtesy, and value. American consumers have spoken very loudly and said that the cheapest product does not necessarily provide lasting value. One way to define quality is by the output.

Quality has three dimensions: design, output, and process. Design refers to what the output is intended to be. A slide rule would be a current example of a product that might be of high quality in the output dimension but not sell today (i.e., low quality design). These properties must be considered from a customer perspective. Design is what we intend to do. Output is what comes out of the system. Process is how we do it. Very simply put, inputs are coming in, outputs are coming out; what goes on in the middle is the process.

Process is not given appropriate attention. Now, some say we pay too much attention to process or procedures. I myself have often complained that following the correct steps seems more important than the end result. On many campuses, affirmative action programs would be an example. So when I say we do not pay enough attention to process, I am saying we should question whether or not a process is appropriate for the task to be performed.

Consider some of the characteristics of a process. Sometimes it is necessary to fix an earlier mistake. This happens, for example, with enrollment, payroll, even teaching. We have a word for fixing earlier mistakes in business: "rework." Another operating characteristic of these processes is giving up on something and starting all over again. The same examples are appropriate. This is called "scrap." In other procedures, some of the steps are unnecessary. That is "unnecessary complexity." Although many of us feel that we have unnecessarily complex procedures imposed on us from outside, we are clever enough to add our own layers of unnecessary complexity.

Consider the following example. The payroll process in a large state university was not working well; errors and complaints were common. People blamed everyone but themselves. The payroll office blamed the people who initiated the forms. The university was decentralized and over 300 locations (people) initiated transactions. No one even had a list of the names of these people. The people who initiated the forms blamed the payroll office. Data were collected.

It was discovered that 50 percent of the forms were either not completely filled out or were filled out incorrectly. This is not very surprising; the university had no required training program for these people. Ninety percent of that 50 percent could be corrected by making a phone call, but this was not as easy as it sounds. Rework. Ten percent of the forms were in such bad shape that they had to be sent back to be started all over again. Scrap. A flowchart of the process was drawn, and it was discovered that depending on where a transaction began, there were between three to seven inspections (i.e., approvals and signatures).

The mistakes were studied using a Pareto analysis. It was discovered that 50 percent of the appointments involved student help and that these transactions accounted for 70 percent of the errors. Therefore, we focused our attention on the student appointment process. Many believed that the inspections were adding cost and not adding value, and it was proposed that they be eliminated.

After considerable debate, the experiment proceeded, but unfortunately the people who initiated the transactions were not told that the inspection process was eliminated. There were "naysayers" who said that by eliminating the inspections, the error rate would increase. The rate appeared to decrease slightly and the time it took a transaction to reach the payroll office decreased by forty-eight hours. Costs went down. Imagine what a good training program could accomplish.

This story has another chapter. State employment policy says that every classified employee has to attend an orientation program within 21 days of employment. That rarely occurred. Analysis of the flowcharts revealed that the personnel department was not informed about new hires until after the payroll office approved them. Data revealed that, on average, the personnel department received that information 17 days after the employee was hired (the standard deviation was 11!) What was the first proposed solution? Add another copy to the form.

Here is a process with rework, scrap, and expensive steps that added no value, just cost. What was the proposed solution? Make it more complex!

It is important to understand that these process characteristics add cost and simultaneously lower quality. These things go together. As the Finding and Purposes section, of the Malcolm Baldridge National Quality Award, established in 1987 in the U.S. states, "American business and industry are beginning to understand that poor quality costs companies as much as 20 percent of sales revenue nationally, and that improved quality of goods and services goes hand in hand with improved productivity, lower costs, and increased profitability" (Public law nos. 100-107).

As a percent of cost of goods sold, which is a more appropriate comparison than sales revenues for nonprofit higher education, the cost of poor quality is greater than 20 percent. Even if we are administrating our institutions considerably better than industry does, which I seriously doubt, it would be worthwhile to study our processes as well as our designs and outputs.

Consider what we do in higher education. Accreditation has historically focused on inputs. Assessment is moving into outputs, and that is a good direction. Faculty members usually concern themselves with curriculum changes (i.e., design). Except for people like Peter Ewell who emphasize the assessment process, as opposed to simply assessment, few people are studying processes.

Continuous process improvement is my subject today; quality is a verb, not a noun. It has five key ingredients: honesty, shared vision, patience, commitment, and a theory or plan.

Honesty

You cannot solve a problem unless you admit that it exists. You cannot improve a process unless you admit that there is room for improvement. We have many problems in higher education; the media has pointed this out often enough. Common issues include the poor preparation of students in grades K through 12, racism, sexism, cheating, the availability of courses, advising, the quality of student life, and the expansion of administration and support services personnel at a rate considerably higher than enrollments.

We must recognize that some of the problems are of our own making. We do not have to apologize for this, although that would not be a bad idea; we just have to admit that we are responsible. That is a very important observation. If we are responsible for a problem, then that means we have the power to do something about it. And that is a fundamental observation. I am not interested in who is at fault here. I am interested in who has the power to improve the situation.

Some problems are not of our own making, but by ignoring them, we not only seem to condone the issue, we make the situation worse. Why are we reactive? Why not be proactive?

Imagine a business denying that their products or services are of poor quality but saying, yes, they could improve quality if they only had more money; they will raise the prices of their products and use the money to provide better quality in the future. This is the way many interpret our appeals for more money.

We must admit that problems exist and that we have the power and responsibility to improve the situation.

Shared Vision

Continuous improvement requires that everyone be involved. We need a shared vision in our communities that includes quality--not just design and inputs, but also outputs and process. We need leadership to accomplish this.

Patience

If a significant portion of our resources are currently being used unwisely, they cannot be found on the day you must retrench. Budget cutting often leads to a lowering of the quality

of outputs. Raising quality by process improvement takes time and study. There is no magic wand, and patience is required.

Commitment

The continuing improvement process requires that everyone in our community is committed to improvement. The chancellor, the president, the administration, the faculty, the students, and the staff all have important roles to play. However, we do not have to wait for everyone to buy in before we can begin, we can start in our offices today.

A Theory or Plan

The theory or plan also has five points: customer (or mission) focus, systematic approach to operations, vigorous development of human resources, long-term thinking, and once again, commitment. These points form a complete system. You cannot fully understand any one point until you understand all five.

Customer (or mission) focus. By studying success stories in industry, we find that virtually every successful company has a driving desire to focus on satisfying customer needs. These companies are willing to change processes and designs to achieve better outputs at lower costs. Successful organizations are flexible.

Ours are often inflexible. Derek Bok, speaking to Harvard's Board of Overseers in response to public criticism of higher education, said:

> Most of the charges are flawed because they ignore basic conflicts and contradictions in the demands society makes on universities. . . . By ignoring the conflicts that underlie so many of the complaints, the debate will remain superficial. . . . In particular, we need to step back and ask whether our universities are doing all they might to help the country address its most important problems--lagging competitiveness, poverty, inadequate public education, environmental hazards, and many more. (*Chronicle of Higher Education*, April 18, 1990, A2)

This is a call for customer focus, a call for a need to know our mission. We need to take another hard look at our mission and then do something about it.

Peter Likins, president at Lehigh, writes that we need to change our culture:

> Each college and university . . . should ask itself if it needs all its vice presidents, and if these vice presidents need all their managers. Over the past two decades, there has been a tremendous growth in personnel on the U.S. campuses, but it's been primarily outside the faculty rank. . . . After we reduce administrators, we need to talk to our faculties about consolidating academic units to accomplish our missions more effectively. (*Chronicle of Higher Education*, May 9, 1990, B1 - B2)

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The administration must be a role model for the faculty. Faculty are going to be very hard to change, and if you can come to them with some success stories, they might be more receptive. In the same article, Likins continues:

> "We cannot succeed in such efforts if our only goal is to reduce costs, however. Academic leaders have to convince their faculties and staffs that managing fewer resources can produce something of permanent value, rather than simply causing bloody budget cuts."

Businesses have learned this. One business after another has found out that cost-cutting efforts often lead to cutting not only the unnecessary but the necessary. Likins believes that: "Higher education needs to emulate the process that corporate America has been going through for the last decade. . . . We have to ask ourself, 'What the hell are we here for?'"

Mission! We have to rethink our goals and priorities. We have to know what our mission is so we can measure our expenditures against our stated purposes. We have to ask ourselves: Who are "those folks?" What are we doing for them? What are their needs? We have to define these needs clearly to be able to measure our successes and failures. I am not naive enough to believe that we must measure everything, but we can make significant steps in that direction. We must change our institutions as the needs of "those folks" change. However, we have every right to do our best to influence what "those folks" think their needs are.

Systematic approach to operations. Systematic, not random. We need continuous improvement of our processes as well as improvement of the other dimensions of quality. This requires focusing on the customer, the process, and the data.

By focusing on the customer, I am now referring not only to "those folks," but also to the internal customer. Each of us is both an internal customer and an internal supplier to other customers in the organization. If one of us does a bad job, the next person must either rework the task, send it back to have it done all over again, or worse, pass it on to the next internal customer. Each of these choices increases costs and lowers quality. Do you know who your internal customers are? Are you satisfying their needs? Can you do better? These questions need answers.

Next, we must focus on the process. What does your supervisor know about your office and the process for which you are responsible? He or she probably has a pretty good idea of what the inputs are. The supervisor knows something about the outputs, but not as much as you would like them to know. Right? But what is known about the process, the way your unit transforms the inputs into the outputs? All too frequently, nothing.

What is going on inside the process? The process can be broken down into six components: people, materials, work methods, facilities, machines, and a measurement system, all of which take place within a culture. These six items need careful analysis.

If an employee is not properly trained to do a job, why are we surprised when the job is not done well? We make people department chairs because they are excellent professors, but this is no guarantee that they can balance budgets or lead other professionals. What kind of preparation in teaching do we give to new faculty and graduate teaching assistants? *I know*

of no institution in our society that does a poorer job of educating its own employees than higher education. We desperately need continuing development programs (i.e., education not training).

Suppose you have a well-prepared person in a position and the raw materials are poor. Can that person do a good job? No. We have competitive bids that all too often guarantee a low price for materials but because of scrap and rework drive up our total costs and lower quality. Put that same person in inadequate facilities with poorly designed work methods, hold him or her responsible for the quantity, not quality, of the job, and you know what happens. Many institutions compete with primary and secondary schools for resources rather than working with them and thereby help themselves and society.

We need to be honest. We need to take a fresh look at ourselves and simply ask the question: Are we doing our job appropriately for the 1990s and the twenty-first century? We need to change our culture to one that encourages everyone in our communities to work toward improving processes. We need a culture that stops placing the blame on the people, a culture that helps people do better.

We have to focus on data. Properly interpreted, data can tell us a lot. Consider the Shewhart Cycle, Plan-Do-Check-Act (PDCA), which is a way to apply the scientific method to process improvement.

Plan. Find an area for improvement. Come up with a theory that says if we change such and such, we will see some type of improvement. Do. Run an experiment; try it on a limited scale. Check. Collect some data to see if the experiment was a success. Act. If the experiment was successful, implement the idea; if not, learn from your mistakes and try again. How do we advance knowledge and science? We advance knowledge and science by rejecting our hypotheses. Failures are just as important as victories if we learn from them. PDCA should be thought of as a continuous cycle going from one theory and experiment to the next.

I teach a statistics class to some 300 students. Many years ago, I heard George Box of the University of Wisconsin allude to the fact that every process generates the data necessary to improve it. Obviously teaching is a process, so I asked the question: What data do I have? It always takes a long time to come up with obvious answers. The data that I had (it took me about seven months to figure this out) was called my grade book. I found that the relationship between homework performance and final exam performance had a coefficient determination of approximately 0.6.

Plan-Do-Check-Act. My class meets two hours in a large lecture, and we take a ten-minute break midway in the class. Theory. I ask my TAs to give me a homework count during this break. If the quantity of homework is significantly down then I can urge students to do their work for the next class during the second hour. It worked. I had taught the course for ten years, and I used to get the homework counts at the end of the semester. Although problems remain, by using PDCA I have witnessed substantial improvements.

Vigorous development of human resources. There is a great need for leadership and education. How strange that we in higher education do such a terrible job of educating our own people in how to run an institution.

As William A. Golomski, a quality improvement consultant and lecturer at the University of Chicago said, "Managers deal with transactions. Leaders deal with the transformation of an organization." That is what education needs--a new culture, one that really believes in continuous improvement and practices what it preaches. We all know about managers who deal only with transactions; what are they doing to improve the situation?

Peter Likins does not argue that we need more management or even better management. He says we need less management:

> There are other positive consequences of managing less. People at lower levels in the organization have more responsibility and more freedom to exercise it; the combination translates into more power. They need fewer approvals, so they have more autonomy in making decisions. They have to trust and respect each other more to get the job done, because there is less supervision and more reliance on cooperation. People in such an environment must meet high standards of quality, and this means that they also have to be well paid.

Let me add that they also need education to do their job. He continues:

> Communication throughout the organization is more critical because a high premium is attached to the effectiveness of cooperation. If we accomplish such changes, we'll need to talk to each other more and control one another less. It might be more fun [Ibid.]

If you look at industry, you will see that this approach works! It adds quality without costs. We need an improved environment. We have more fear of the consequences of doing a poor job on our campuses than we want to admit. We often hear people say that we should allocate funds to departments or faculty who are doing well and not to the others. That is called punishment. Many of our campuses fire coaches when they do not have a winning record. And as one of them once said: "How would you, professor, like your life to depend on the performance of an 18- to 22-year-old?" That's management by fear. Publish or perish! My emphasis is on the last word. That's management by fear. Up or out. Fear! Registration. Fear! We need to remove that fear so people can perform at their best. We nee to develop human relations.

Long-term thinking. Peter Drucker describes it best. Long-term thinking is molding the future by understanding the consequences of what we do today. Every day we delay starting the change is a day wasted. You can start in your own offices without anyone's approval. Do not wait to be asked; begin the journey; be a role model.

Commitment. I am being redundant on purpose. Quality is not a spectator sport. It is not something we can delegate to someone else; it is something with which we must all get involved. I am not talking about making an incremental change in our organization of only

4 or 5 or 6 percent. I can give you case history after case history of improvements of 50 to 100 percent, but let me just mention one case.

Last year I spoke to you about the problems that Motorola had in making televisions back in the 1970s. They got out of the business. In 1988, Motorola was one of the first companies to receive the Malcolm Baldridge National Quality Award. They learned their lesson, and they learned it well. They committed themselves to improving quality by using many of the ideas discussed here. Today they are the prime supplier of electronic pagers and cellular telephones for Nippon Telephone and Telegraph. Their defect rate today, not only in manufacturing but in support services and technical publications, is below 3 in 10,000. They have adopted a goal that they call the six sigma goal. They want their processes to perform in such a way that their specifications are six standard deviations away from the process mean.

Implementing the Plan

Why don't we do it? Every place I go, management's initial reaction is to say this is all very nice, but my business or institution is different. Happily, with patience, people change their minds. Higher education is also different, and some of the differences make it difficult to initiate changes. After all, I am calling for a revolution, only it has to happen in an evolutionary way. Our conservativeness does make it difficult. But consider the *values* that I have been stressing.

The importance of people. When many people hear about cutting costs, unfortunately the image that comes to mind is the work of Frederick W. Taylor. I am not proposing an authoritarian system. I am not suggesting a system without checks and balances. I am presenting a system that empowers people! Less management. You would think that valuing people is compatible with higher education.

The need to use knowledge. I am amazed at how faculty become administrators and do not use what they know. Statisticians often do not use statistics; scientists often do not use the scientific method. Is it that these people do not respect their own disciplines or that they do not respect our processes? Let us use our knowledge. Universities and colleges are a knowledge resource. A good friend of mine, Phil Humphrey, a biologist and director of the Museum of Natural History at the University of Kansas, sees the museum as an ecosystem. He leads by "constructing hypotheses about people, not making judgments."

Continuous improvement. Why can't we admit we are not perfect? Show me somebody who believes that their education is complete and I will show you someone who has turned off their mind. Show me an organization that does not believe it has room for improvement, and I will show you an organization that is in desperate trouble.

Why don't we in higher education, we who hold dearly such values as the importance of people, knowledge, and continuing improvement, why don't we practice what we preach? I am convinced that if we do, over a long period of time, not next week, not next year, but over a five- to ten-year period, we in higher education can show significant improvements. Institutional researchers should and must play a leading role in this transformation.

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New Directions for Institutional Research
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The AIR Professional File
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